WHAT IS CLAIMED IS:

1. A method, comprising:

speculating that a connection will subsequently have a packet to be processed in accordance with a transmission control protocol; and

arranging for a packet processing engine to pre-fetch from an external memory

5   unit a protocol control block associated with the connection.

2. The method of claim 1, wherein the packet to be subsequently processed is a send packet and said speculating is based on a receive packet.

10   3. The method of claim 2, further comprising:

calculating a time when the protocol control block is to be pre-fetched from the external memory unit.

4. The method of claim 3, wherein the time is calculated in accordance with an

15   estimated processing time associated with the receive packet less an estimated latency time associated with pre-fetching the protocol control block from the external memory unit.

5. The method of claim 4, further comprising:

20   dynamically adjusting at least one of: (i) the estimated processing time, and (ii) the estimated latency time.

6. The method of claim 1, wherein the packet to be subsequently processed is a receive packet and said predicting is based on a send packet.

7. The method of claim 6, further comprising:

5   calculating a time when the protocol control block is to be pre-fetched from the external memory unit.

8. The method of claim 7, wherein the time is calculated in accordance with an estimated round-trip time associated with the send packet less an estimated latency time

10   associated with pre-fetching the protocol control block from the external memory unit.

9. The method of claim 8, further comprising:

dynamically adjusting at least one of: (i) the estimated round-trip time, and (ii) the estimated latency time.

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10. The apparatus of claim 1, wherein said speculating is performed by the packet processing engine.

11. The apparatus of claim 1, wherein said speculating is performed by a host

20   processor and said arranging comprises:

pushing the protocol control block from the external memory unit to the packet processing engine.

12. The apparatus of claim 1, wherein the packet processing engine is associated

25   with a network interface card.

13. An apparatus, comprising:

a storage medium having stored thereon instructions that when executed by a machine result in the following:

    speculating that a connection will subsequently have a packet to be

5   processed in accordance with a transmission control protocol, and

    arranging for a packet processing engine to pre-fetch from an external memory unit a protocol control block associated with the connection.

14. The apparatus of claim 13, wherein the packet to be subsequently processed

10   is a send packet and said predicting is based on a receive packet.

15. The apparatus of claim 13, wherein the packet to be subsequently processed is a receive packet and said predicting is based on a send packet.

15   16. The apparatus of claim 13, wherein execution of the instructions further results in:

    calculating a time when the protocol control block is to be pre-fetched from the external memory unit.

20   17. An apparatus, comprising:

a packet processing engine; and

an input path to receive from an external memory unit a pre-fetched protocol control block for a connection predicted to subsequently have a packet to be processed by the packet processing engine in accordance with a transmission control protocol.

18. The apparatus of claim 17, wherein the packet processing engine comprises a network interface card acting as a transmission control protocol offload engine for a host processor.

5   19. The apparatus of claim 18, wherein the packet processing engine predicts the connection and calculates a time when the protocol control block should be pre-fetched from the external memory unit.

20. The apparatus of claim 18, wherein the host processor speculates the
10   connection and calculates a time when the pre-fetched protocol control block should be pushed to the packet processing engine from the external memory unit.

21. The apparatus of claim 17, further comprising:

a protocol control block cache local to the packet processing engine to store the
15   pre-fetched protocol control block.

22. An apparatus, comprising:

a host processor; and

an output path to arrange for a packet processing engine to pre-fetch from an
20   external memory unit a protocol control block for a connection predicted to subsequently have a packet to be processed by the packet processing engine in accordance with a transmission control protocol.

23. The apparatus of claim 22, wherein the host processor is adapted to schedule
25   a time for the pre-fetch.

24. A system, comprising:

a dynamic random access memory unit; and

a network interface card, including:

a packet processing engine, and

5   an input path to receive from the dynamic random access memory unit a

pre-fetched protocol control block for a connection predicted to subsequently

have a packet to be processed by the packet processing engine in accordance with

a transmission control protocol.

10   25. The system of claim 24, further comprising:

a host processor,

wherein the packet processing engine is a network interface card acting as a

transmission control protocol offload engine for the host processor.

15   26. The system of claim 25, wherein the packet processing engine predicts the

connection and calculates a time when the protocol control block should be pre-fetched

from the dynamic random access memory unit.

27. The system of claim 25, wherein the host processor predicts the connection

20   and calculates a time when the pre-fetched protocol control block should be pushed to the

packet processing engine from the dynamic random access memory unit.

28. The system of claim 24, wherein the network interface card further includes:

a protocol control block cache to store the pre-fetched protocol control

25   block.